

AMENDMENTS TO THE SPECIFICATION

Please replace the present title with the following amended title:

Correcting Device to Compensate for Polarization Distribution Perturbations

Please replace the opening paragraph with the following amended text:

CROSS-REFERENCE TO RELATED APPLICATIONS

This is a National Stage of International Application No. PCT/EP2004/006504 filed June 17, 2004, and claiming priority of German patent application DE 103 28 938.0. ~~the disclosure of which is hereby~~ The full disclosures of these earlier applications are incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

On page 1, please amend the following paragraph as shown:

The invention relates to a correcting device to compensate for perturbations of the polarization distribution over the cross section of a light beam in an optical system, ~~having at least one correcting component which comprises a birefringent correcting element having two essentially parallel surfaces, between which the thickness of the correcting element is essentially constant. The invention also relates to, for example a projection objective for microlithography having such a~~

~~correcting device~~ a microlithographic projection exposure apparatus.

2. Description of Related Art

On page 1, please delete the following paragraph:

~~A correcting device and a projection objective of this type are known from DE 198 07 120 A1.~~

On page 3, please amend the following paragraph as shown:

German Publication DE 198 07 120 A1, ~~already mentioned in the introduction,~~ discloses a correcting device to compensate for polarization perturbations which vary locally over the cross section of a light beam. The correcting device described therein comprises a plate, which consists of magnesium fluoride (MgF_2) and is therefore birefringent, introduced into the beam path of the optical system. The thickness of the plate varies over its cross section, which leads to a position-dependent compensating effect. Since the thickness variations required for the compensation amount only to a few micrometers, the freeform surfaces on the plate cannot be produced by polishing or other conventional methods of material erosion. Production of the freeform surfaces by means of ion beam processing is therefore proposed. Such processing methods are used, for example, in the production of so-called "nano-aspheres" which are used to correct wavefront errors in projection exposure apparatus.

On page 4, please amend the following paragraph as shown:

SUMMARY OF THE INVENTION

It is an object of the invention to improve a correcting device of the type mentioned in the introduction, so that the polarization of light passing through is influenced in the controlled way only where perturbations of the polarization distribution need to be compensated for.

On page 9, please amend the following paragraph as shown:

BRIEF DESCRIPTION OF THE DRAWINGS

Exemplary embodiments of the invention will be explained below with reference to the drawings, in which:

On page 10, please amend the following paragraph as shown:

Figure 7 shows a simplified meridian section through a catadioptric projection objective having a correcting device according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS